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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,617	08/29/2005	Ya Xu	040894-7140	7133

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MORGAN LEWIS & BOCKIUS LLP
1111 PENNSYLVANIA AVENUE NW
WASHINGTON, DC 20004

EXAMINER	
GRAY, JILL M	
ART UNIT	PAPER NUMBER
1794	
MAIL DATE	DELIVERY MODE
04/28/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/516,617	XU ET AL.	
	Examiner	Art Unit	
	Jill Gray	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 January 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The submission of a certified English language translation of the Japanese priority document has been noted. However, a fair reading of said document does not provide support for the range of a Ni content of 49 to 52% by atom, as claimed in present claim 1, and for which claims 2 and 4-21 depend. Accordingly, applicants' priority based upon Japanese Patent Application No. 2002-162287 is withdrawn.

The objection of claims 6-9, 12, and 15 is moot in view of applicants' amendments.

The renumbering of claims 4-15 has been noted.

The rejection of claims 1-2, 4-5, 10-11, 13 and 14 under 35 U.S.C. 103(a) as being unpatentable over Xu et al., 7,253,219 B2 in view of JP08013068 and Saito et al, "A New Fabrication Process of TiNi Shape Memory Wire" is withdrawn in view of applicants' statement of common ownership.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-2 and 4-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Publication JP2002-356757 (Kyo), (machine translation) in view of JP08013068 (JP'068) and Saito et al., "A New Fabrication Process of TiNi Shape Memory Wire" (Saito), for reasons of record.

Kyo discloses a shape memory alloy wire substantially of the type contemplated by applicants, wherein said wire is produced by cold drawing a shape memory alloy and comprises a shape memory alloy that has a reverse transformation starting temperature of 130°C or higher and has a shrinking strain of 2% or more, wherein the shape memory alloy comprises a TiNi alloy in an Ni content of 49 to 52% by atom and a cold drawing rate of at least 10% or more, as required by present claims 1-2. Figures 7-8 show reverse transformation termination temperatures of at least 250°C. See entire document and for example claims 1-6. Kyo discloses the formation of composite materials comprising glass fibers or carbon fibers in thermosetting epoxy resins, as required by present claims 4-9, 11, 14, and 16-19. See page 6 of translation. In addition, Kyo teaches a process for producing said composite material, said process being essentially as claimed in present claim 13, further teaching that the heating of the wire is carried out by application of electric current, per claims 12, 15, and 20-21. See claim 11. Kyo does not disclose the diameter of his shape memory alloy wire. JP'068 and Saito each teach that fine diameter shape memory TiNi alloy wires are known in the art, wherein Saito additionally teaches that his wire is cold drawn in order to get fine wires that are often needed in for medical use or in the application of microactuators. While Kyo is silent as to the diameter of his wire, this limitation is drawn to the size of the wire. It is the examiner's position that changes in size are not a matter of invention. *In re Dailey,* 149 USPQ 47 (CCPA 1976). Alternatively, JP'086 and Saito each teach that TiNi alloy wires of the instant claimed diameter were known in the art at the time the invention was made. It would have been obvious to the skilled artisan at the time the

invention was made to modify the teachings of Kyo by forming a shape memory alloy fine wire having a diameter within the present claimed range as taught by JP'086 and Saito. Hence, to use wires of this diameter in the formation of composite products is not construed to be inventive, absent factual evidence to the contrary. Regarding claim 10, this claim is a product-by-process claim, wherein patentability relies solely on the product. Accordingly, the process limitations add no patentable weight.

Therefore the combined teaching of the prior art would have rendered obvious the invention as claimed in present claims 1-2, and 4-21.

3. Applicant cannot rely upon the certified translation of the foreign priority papers to overcome this rejection.

4. Claims 1-2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldberg et al., 5,641,364 (Goldberg) taken alone, or in view of JP08013068 (JP'068) and Saito et al., "A New Fabrication Process of TiNi Shape Memory Wire" (Saito).

Goldberg discloses shape memory allow wires substantially of the type contemplated by applicants, wherein said wire is produced by cold drawing a shape memory alloy and comprises a shape memory alloy that has a reverse transformation starting temperature of 130°C or higher and a reverse termination temperature of at least 250°C and has a shrinking strain of 2%, as required by claim 1. Also, Goldberg teaches a cold drawing rate of at least 20%, per claim 2. See entire document, for example abstract, column 8, lines 7-9 and Tables. Goldberg does not teach the instant claimed wire diameter. It is the examiner's position that changes in size are not a

matter of invention. *In re Dailey,* 149 USPQ 47 (CCPA 1976). Alternatively, JP'086 and Saito each teach that TiNi alloy wires of the instant claimed diameter were known in the art at the time the invention was made. It would have been obvious to the skilled artisan at the time the invention was made to modify the teachings of Goldberg by forming a shape memory alloy fine wire having a diameter within the present claimed range as taught by JP'086 and Saito. Hence, to modify the teachings of Goldberg by changing the wire diameter during routine experimentation is not construed to be inventive, absent factual evidence of unexpected or superior properties directly related to the instant wire diameter. Regarding claim 10, this claim is a product-by-process claim, wherein patentability relies solely on the product. Accordingly, the process limitations add no patentable weight.

Therefore the combined teaching of the prior art would have rendered obvious the invention as claimed in present claims 1-2 and 10.

5. Claims 4-9 and11-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldberg et al., 5,641,364 (Goldberg) taken alone, or in view of JP08013068 (JP'068) and Saito et al., "A New Fabrication Process of TiNi Shape Memory Wire" (Saito), further in view of JP09176330 (JP'330).

Goldberg and Saito are as set forth above, but do not teach the incorporation of the shape memory alloy wire into a composite. JP'068 is as set forth above and teaches the formation of composite materials comprising shape memory alloy wires and thermosetting resins, and JP'330 teaches the formation of composite materials comprising matrix materials having shape memory alloy wires incorporated therein.

Accordingly, all of the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions and the combination would have yielded predictable results to one of ordinary skill in the art at the time the invention was made.

Therefore, the combined teaching of the prior art references would have rendered obvious the invention as claimed in present claims 4-9 and 11-21.

Response to Arguments

6. Applicant's arguments filed January 6, 2009 have been fully considered but they are not persuasive.

Applicants argue that the examiner's position that "changes in size are not a matter of invention" may be correct on its face but obscures the fact that the present invention allows for the improvement of shape memory alloy wires at wire sizes previously unattainable.

In this regard, it is the examiner's position that an applicant is expected and presumed to know something about the art than what a prior art reference literally teaches. Cold working in wire formation is a process known for producing fine wires. This is evidenced by the teachings of Saito and JP'068. The skilled artisan would have immediately envisaged further cold working processing the wire of Goldberg to produce fine wires that could be used in medical applications. And alternatively, the teachings of Saito and JP'068 would have provided motivation to the skilled artisan for forming fine wires having diameters within the present claimed range.

Applicants argue that Goldberg is applied to ternary alloys and not a binary alloy as recited in the present claims and that the difference in composition is significant and should not be overlooked.

In this regard, it is the examiner's position that the presence of the term "comprising" does not exclude the ternary alloys of Goldberg.

Applicants argue that Goldberg in view of JP'068 and Saito also fails to teach or suggest the limitations recited in present claim 1, and that both JP'068 and Saito teach a fine wire of 120 μm or less, but they fail to teach or suggest the claimed transformation temperatures and shrinking strain rates for such wires, further arguing that Goldberg in view of JP'068 and Saito fails to teach or suggest each and every feature of claim 1.

In response thereto, it is the examiner's position that "[t]he test for combining references is not what the individual references themselves suggest but rather what the combination of the disclosures taken as a whole would suggest to one of ordinary skill in the art." *In re McLaughlin,* 170 USPQ 209 (CCPA 1971).

Applicants argue that there is no motivation or suggestion to combine Goldberg in view of JP'068 and Saito.

7. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in

the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been to the skilled artisan to modify the teachings of Goldberg by reducing the diameter of his wire to produce fine wires that could be used in the medical field or the application of microactuators, motivated by the teachings of JP'068 and Saito.

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jill Gray whose telephone number is 571-272-1524. The examiner can normally be reached on M-Th and alternate Fridays 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on 571-272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jill Gray/

Primary Examiner
Art Unit 1794

jmg